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ABSTRACT

Using the nationally representative National Education Longitudinal Study of 1988 (NELS88) database, the relationships of first language (L1) proficiency to subsequent use of that language (home language maintenance), English proficiency and achievement and English self-concept were examined. Confirmatory factor analysis results showed that L1 proficiency in the tenth grade did not correlate significantly with subsequent English grades in school or English proficiency in twelfth grade, but had a strong positive relationship to twelfth-grade use of L1, and a surprisingly positive correlation with twelfth-grade English standardized test scores. Use of L1 up to twelfth grade showed almost no correlation with twelfth-grade English outcomes. Whereas eighth-grade L1 proficiency showed almost no correlation with tenth-grade English outcomes, eighth-grade L1 use had a negative impact on tenth-grade English test and proficiency. However, these negative effects were found only in early high school and did not persist over time. The results did not support speculation that home language proficiency would have persistent negative effects on English outcomes, but suggest the need for support in L1 enhancement for home language maintenance. (Contains 44 references.) (Author/MSE)

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Does Home Language Hamper English Achievement: Analysis of the NELS88 Longitudinal Data

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Abstract

Using the nationally representative National Education Longitudinal Study of 1988 (NELS88) database, the relations of first language (L1) proficiency to subsequent use of that language (home language maintenance). English proficiency and achievement, and English self-concept were examined. Confirmatory factor analyses (CFA) results showed that L1 proficiency in 10th grade (T2) did not relate significantly with subsequent English school grades and English proficiency in 12th grade (T3) but had a strong positive relation with T3 L1 use and also surprisingly positive relation with T3 English standardized test. Use of L1 up to 12th grade had almost no relation with T3 English outcomes. Whereas T1 L1 proficiency had almost no relation with T2 English outcomes, T1 L1 use had negative impacts on T2 English test and proficiency. However these negative effects were found only in the early years of high school and did not persist over time. The results did not support speculations that home language proficiency would have persistent negative effects on English outcomes, but suggest the need for support in L1 enhancement for home language maintenance.

Historically, there have been debates on whether non-English-speaking students in an English-speaking country should be encouraged to maintain their home language, and whether the maintenance of a home language would have negative effects on English achievement and academic work. On the one hand, policies in some English-speaking countries, e.g., Australia and the U.S.A., endorse the maintenance of languages other than English (Australian Advisory Council on Languages and Multicultural Education, 1990; President's Commission on Foreign Language and International Studies, 1979). On the other hand, there is a widespread belief that the use of more than one language is detrimental to cognitive functioning (see Wong Fillmore & Valadez, 1986 for a review). This study examines the relations of home language proficiency with factors such as English achievement (standardized test and school grade) and English self-concept based on the National Education Longitudinal Study of 1988 (NELS88) database. Specifically, this study addresses these critical questions: (a) Does proficiency in L1 have a positive relation with subsequent use of the L1, and (b) does L1 have a negative relation with subsequent English proficiency and achievement and English self-concept?

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Language Proficiency And Home Language Maintenance

Numerous studies have been conducted on bilingualism and researchers have explored factors that may affect home language maintenance (e.g., Aikman, 1995; Galindo, 1995; Genesee, Boivin, & Nicoladis, 1996; Pearson et al., 1997; Schnitzer & Krasinski, 1996). In his study on German migrants in Australia, Putz (1991) suggested that home language maintenance is based largely on the social activities related to the family. Through these activities, an individual may establish an identity of ethnicity (Corcoran, 1994; Koenig, 1980) that may subsequently encourage continual use of the L1. Thus, one may assume that a child who is exposed to a rich home

language environment is more likely to maintain the language. However, maintenance of a language is often related to attitudes toward the political and socio-economic status of the language, the community that speaks that language (Frank, 1993; Galindo, 1995), or the instrumental value of the language for other purposes (Fairgold, 1996). Thus, above and beyond the fact that an L1 may have become a habit that tends to continue over time, an individual who is competent in the L1 and has favorable perceptions about it would probably continue to use it (hence maintenance of the home language).

Home Language Proficiency And English Achievement

A serious concern of educators and policy makers in English-speaking countries with migrant students is often their underachievement at school. At least some educators tend to believe that students from non-English-speaking backgrounds (NESB) underachieve mainly because they have a language other than English (LOTE) that tends to cause confusion in their minds and prevents them from becoming fluent in English (Cummins & Swain, 1986). Bilinguilism is sometimes perceived as a serious impediment to children's development in English and in other academic areas (Cummins, 1984), and LOTE was once seen as a threat to national unity.

Over the past decades when behavioral psychology prevailed, LOTE was typically seen as a hindrance to development in English (see Ellis, 1994 for a detailed review; also see Towell & Hawkins, 1994). The behaviorists' emphasis on habit formation implies that a LOTE has to be unlearned before successfully forming new, desirable habits in the target language of English. On the basis of their assumptions, the higher the L1 proficiency of a student, the harder it is for the student to unlearn the well established habits in L1 in order to learn the new habits of a second language (L2), and thus the less likely will the student be proficient in English. However, more recent findings in L2 acquisition research suggest that LOTE itself may not be a major cause for underachievement in academic work. On the contrary, some studies have shown that the exclusive use of the dominant language (e.g., English as an L2) may result in poorer academic progress (e.g., Bhatnagar, 1980; Chesarek, 1981). Bhatnagar examined the academic progress of Italian migrant children in English-language elementary schools in Montreal and found that those children who used Italian and English at home were better at English in both the spoken and written varieties than those who used English only. Thus, proficiency in English does not necessarily require deterioration in the home language, nor should proficiency in home language require deprived proficiency in English.

Instead of emphasizing the exclusive use of English, some studies have, in contrast, indicated that the more the L1 is emphasized and used, the better the students tend to perform. For example, a study of 9-10 year-old American born Chinese showed that the more exposure to and emphasis on Chinese outside school through attending Chinese classes, the better the children performed in English (Yee & Laforge, 1974). Similarly, Dolson (1984) found that Hispanic students in grades 5 and 6 who used Spanish as the main language at home performed academically better than those who used English as the main language. These studies provided evidence that refutes the suggestion that proficiency in LOTE would lead to lowered performance in English or in other academic areas. Instead, they argued for facilitative effects of proficiency in L1 on L2 acquisition, thus supporting bilingualism.

In support of bilingualism, some researchers have suggested that skills in L2 may be developed on the basis of skills already acquired in L1. Recent studies have shown not only that English achievement is unlikely to be negatively affected by home language (e.g., Dolson, 1985; Wijnstra, 1980), but some other studies have also demonstrated that bilingual learners may even outperform native English speakers (e.g., Cummins, 1984; Lambert, Genesee, Holobow, & Chartrand, 1993), especially when instructed with effective programs. For example, in Canada, Cummins (1984) found that Canadian-born children whose parents migrated recently performed as well as or even better than Anglo students. Similarly, Skutnabb-Kangas and Toukomaa (1976) found that their sample of

Finnish children who migrated to Australia performed well in academic areas. It seems that bilingual children are able to excel in both languages.

In general, research findings since the 1960s have shown support for cognitive, social, and neuropsychological advantages of having a LOTE. In her review of studies on the maintenance of second languages, Oxford (1982) found evidence that supports the notion that bilingualism may foster cognitive growth. Mohanty (1990) even suggested that the maintenance of home language may be more beneficial for academic work than a shift to the dominant language. In summarizing the studies by Ben-Zeev (1977) of Hebrew-English bilingual children in New York and Israel and by Ianco-Worral (1972) of Africaans-English bilinguals in South Africa, Lambert (1978) noted that bilingual students seemed to have greater cognitive flexibility, better skills in auditory reorganization of verbal material, more flexible manipulation of the linguistic code, and more advanced concrete operational thinking. Hence, in contrast to the earlier behavioral views, more recent reviews of some early studies have refuted claims of detrimental effects of bilingualism on academic work (Wong Fillmore & Valadez, 1986) and more recent findings have supported the advantages of bilingualism.

Despite the evidence supporting the maintenance of L1, however, these findings did not preclude the possibility of confusion between the two languages. Even the notion of interlanguage (Selinker, 1972) that posits a more positive view of a somewhat transitional stage toward L2 proficiency does expect errors due to the incompatibility of some aspects of the two languages. Although these errors may be treated as transient features at a certain stage of L2 development, it is not unreasonable to expect some negative effect on both the L1 and L2. Particularly if the learner's L1 has not been firmly established, L1 is unlikely to have any positive effect on L2 acquisition, as claimed by advocates of bilingualism. Furthermore, the successful development of a language requires practice. The competition between the languages of a bilingual necessarily implies that when one language is used, the other is not. This inevitably reduces the total amount of practice in either language, relative to a monolingual. Hence, it is inevitable for a bilingual to take longer time to achieve proficiency in both languages, compared to a monolingual learning just one. Therefore, it is quite reasonable to expect, perhaps partly on the basis of behaviorist arguments, that the use of a home language could result in lowered English performance at least at the earlier stages of L2 development, especially if the L2 learner has not mastered the L1. For learners who are proficient in their L1, however, the effect of L1 on L2 may be more facilitative than detrimental. A more important issue is therefore not whether bilingualism has any detrimental effect on the learning of English as an L2, but rather the question of whether any negative effect that may exist at the earlier stages would persist over time. Whereas behavioral theories predict negative effects of L1 on L2 acquisition, recent findings of facilitative effects of L1 on L2 acquisition suggest that given sufficient time for development and appropriate intervention, proficiency in and continual use of L1 would not have negative effects on English learning outcomes over time.

Language Proficiency And Self-Concept

In considering the impact of bilingual students' L1 on their English achievement, it is also relevant to investigate if proficiency in L1 would have a negative effect on English self-concept that may have significant influence on subsequent effort and persistence in English learning. To educational researchers and practitioners, the relation between academic achievement and academic self-concept has always been an important concern. For example, Marsh and Yeung (1997) demonstrated a reciprocal relation between academic self-concept and academic achievement such that prior achievement had a significant impact on subsequent self-concept development and prior self-concept in a specific area also had a significant impact on subsequent achievement in that area. Marsh (1990; also see Marsh & Yeung, in press) suggested that self-concept is formed through evaluative processes which are affected by input from within and outside the individual, and is often based on a frame of reference. In the context of bilingualism, the student's perceptions of the two languages are likely to be formed on the basis of

different frames of reference. Whereas English self-perception is more related to comparisons with criteria in the English curriculum, home language self-perception would be more related to comparisons with competency endorsed by parents, siblings and people of the language community. Because of their different frames of reference, it would be unlikely that proficiency in L1 would have a substantial negative relation with subsequent English self-concept development.

In sum, we hypothesized that (a) proficiency in L1 would have strong positive relations with subsequent home language use; (b) proficiency and use of L1 would not have substantial impacts on subsequent English proficiency, English achievement, or with subsequent English self-concept after controlling for prior effects of these constructs; and (c) negative relations of L1 use and L1 proficiency on English outcomes found in earlier stages of development would diminish over time.

Method

NELS88 Data: Variables and Sample

The present study is based on selected variables (see Table 1) from the commercially available NELS88 database (see Ingles et al., 1992). Students who responded to items related to their use of a LOTE were 5,491 in 8th grade; 4,049 in 10th grade; and 1,949 in 12th grade. The analyses of this study used data of only students who had complete data for all three time points (N = 889). The variables were recoded such that higher scores reflected more favorable responses. The variables inferred from these response items were:

English school grade. School grades in English were available for all three data collection points, each being a single indicator for the latent variable of Grade in subsequent analyses. T1 and T2 grades were based on students' self-reported grades whereas T3 grade was based on an examination of students' transcripts by administrators of the NELS88 study.

English test. English test scores were available for all three time points and similar to school grades, they form single indicators for the latent variable of Test in subsequent analyses.

Home language proficiency. L1 proficiency was inferred from four items on students' self-reported understanding, speaking, reading and writing of the language used at home. They were available only at T1 and T2. Reliability estimates were good (alphas = .86 and .87, respectively).

English proficiency. Similar to L1 proficiency, this latent variable was inferred from self-reported understanding, speaking, reading and writing of English. However, data were available for all three waves. Reliability estimates for T1, T2 and T3 English proficiency were good (alphas = .92, .92 and .91, respectively).

English self-concept. There were four items that were available only at T2. Reliability estimates for English self-concept was (alpha = .84).

English affect. The latent variable of English affect was inferred from two items for T1 only. Marsh and Yeung (1996) used three items to infer the latent construct of English affect, but because of unreasonably low reliability when analyzing with this particular sample, the negative item of "often afraid to ask questions in English" was dropped. Because English self-concept data were available only at T2, we used English affect as a control for T2 English self-concept to minimize possible bias of effects in subsequent analyses. Reliability estimate for English affect was (alpha = .52).

Home language use. Home language was inferred from 7 items at T1 and 4 items at T3. Reliability estimates for T1 and T3 home language use were (alphas = .83 and .76, respectively).

Statistical Analyses

All the measured variables were used to construct a 43 x 43 covariance matrix that formed the basis for subsequent CFA. The approach of CFA has been described elsewhere (e.g., Bollen, 1989; Byrne, 1989; Joreskog & Sorbom, 1993; Marsh, 1994) and is not further detailed here. Analyses were conducted with the SPSS version of

LISREL (Joreskog & Sorbom, 1993) to test the a priori path structure as shown in Figure 1. The ordering of variables is primarily based on their temporal sequence. However, to test the relation between prior home language use and subsequent English outcomes, it is more appropriate to place T3 Home Language Use before the other T3 variables instead of relating Grade 8 home language use to other variables in Grade 12. Because the students' responses on home language use necessarily reflect their ongoing process of using the language, in this case where T2 home language use data were not available, placing this variable between T2 and T3 made it possible to evaluate the relations between these variables. The goodness of fit of the model is evaluated based on suggestions of Marsh, Balla, and McDonald (1988) and Marsh, Balla, and Hau (1996) with an emphasis on the Tucker-Lewis index (TLI), but we present also the chi-square test statistic and the relative noncentrality index (RNI). The critical paths considered here are presented as bold arrow lines in Figure 1.

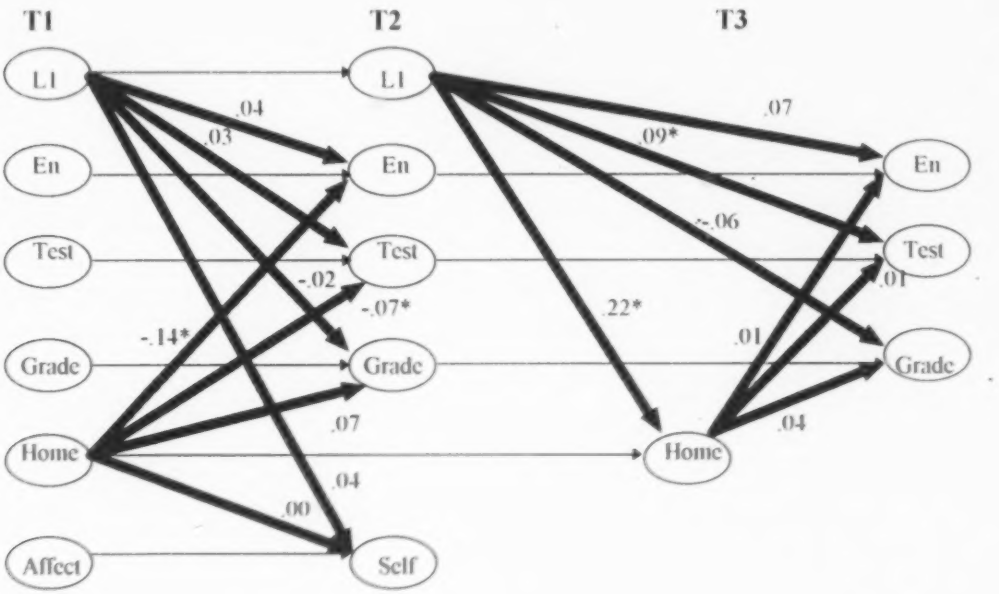

Figure 1. Path model

Note: Causal ordering is strictly in accordance with the times of data collection (T1, T2, and T3). L1 = home language proficiency. En = English proficiency. Grade and Test are English school grade and standardized English test scores. Affect = English affect. Self = English self-concept. Home = home language use. Critical paths are shown in bold (* $p < .05$). To avoid cluttering, most of the paths are not shown here. The solution of this model had a χ^2(df) value of 1,518.02(714), TLI = .971, RNI = .977, RMSEA = .033 [from null model with χ^2 (df) = 35,414.38(903)].

Results

The model converged to a proper solution (Table 1) with good fit to the data (TLI > .9).

Relation between L1 proficiency and home language maintenance. Consistent with the a prior prediction, the critical path from T2 L1 proficiency to T3 Home language use was positive and statistically significant (.22) indicating that the more proficient (or the more the student felt proficient) in the home language, the more likely that home language was subsequently used and therefore maintained.

Relation between L1 proficiency and subsequent English outcomes. Consistent with a priori predictions, none of the critical paths from T1 L1 proficiency to T2 English standardized test, T2 school grade, T2 English proficiency, and T2 English self-concept was statistically significant (.03, -.02, .04 and .04, respectively). Similarly the paths from T2 L1 proficiency to T3 English school grade and T3 English proficiency were not statistically significant (-.06, and .07, respectively). Surprisingly, however, T2 L1 proficiency had a statistically significant relation with T3 English standardized test (.09), indicating a positive impact of prior L1 proficiency in 10th grade

on subsequent performance in the English standardized test in 12th grade. Thus, prior proficiency in L1 did not have significant negative relations to subsequent English outcomes.

Relation between home language use and English outcomes. The paths from T1 Home language use to T2 English standardized test and to T2 English proficiency were negative and statistically significant (-.07 and -.14, respectively) whereas the paths to T2 English grade and English self-concept were nonsignificant (.07 and .00, respectively). However, the paths from T3 Home language use to T3 English test, grade, and proficiency outcomes, consistent with a priori predictions, were small and statistically nonsignificant (.01, .04, and .01, respectively) after controlling for the prior effects of these variables. Thus the negative relations of home language to two of the English outcomes found in the earlier high school years did not carry over to the later years of high school.

Discussion

We examined the relations of home language proficiency with home language maintenance, English achievement, English proficiency, and English self-concept using a CFA approach with longitudinal data. The results show that for the bilingual students, prior proficiency in L1 had strong positive relations with subsequent home language maintenance, and had no significantly negative relations to any of the subsequent English outcomes considered here. These results did not support speculations that proficiency in L1 could hamper English learning. In considering the impact of L1 on English self-concept, the results showed nonsignificant paths from prior use and proficiency of L1 in 8th grade to subsequent English self-concept in 10th grade; again rendering no support for detrimental effects of L1 proficiency on English self-concept that could be essential for the learners to further invest their effort in the L2. Instead, the significantly positive path from L1 proficiency in 10th grade to English standardized test in 12th grade suggest the possibility of a facilitative effect of L1 proficiency on English achievement.

The results of the present investigation suggest a complicated relation between the two languages of a bilingual child. Whereas the two languages seem to be in conflict and competition, they seem also to coexist reasonable well. On the one hand, the maintenance of a home language tends to be strongly related to the user's self-perceived proficiency in that language, implying that the maintenance of a home language may be facilitated through enhancement of proficiency in that language, and perhaps enhancement of self-perception in that language as well. On the other hand, whereas the home language may be maintained due to proficiency in that language, L1 proficiency does not necessarily lead to deprived English achievement or English self-concept that could have long-term effects on further English accomplishments. The results clearly show that home language proficiency tends to have almost no effect on English school grades and English self-concept after controlling for prior effects of these constructs. Thus, subsequent English grades can mostly be explained by prior English grades; and subsequent English self-concept can mostly be explained by prior English affect.

However, the patterns of relations of prior home language use to subsequent English outcomes were quite different between the earlier and later years of high school. Home language use in 8th grade tended to have a negative impact on English standardized test and English proficiency. However, the corresponding paths from T2 to T3 were close to zero (.01 for both). A comparison of these paths with those leading from L1 proficiency to English outcomes clearly shows a distinction between frequency of use and proficiency in L1 and their relations with other constructs. The negative relations of home language use (in terms of frequency) and the mostly positive but nonsignificant L1 proficiency to English outcomes at the developmental stage between 8th and 10th grades seem to indicate that L1 users who were proficient in their L1 were less likely to suffer from lowered English performance. Logically, based on the competition for time of practice between L1 and L2, one might expect the negative relation between home language use and English outcomes to persist. However, compared to the paths in the earlier high school stage, the paths from home language use to English outcomes in the later stage became

nonsignificant (and positive) whereas the paths from T2 L1 proficiency became more positive, suggesting that at this more matured stage of development (and also perhaps two more years' practice), the bilinguals have acquired better capabilities in coping with both languages and started to benefit from their proficiency in L1, as suggested by advocates of bilingualism. These results also suggest that the differential relations of L1 proficiency and L1 use to other constructs may warrant further research.

The issues addressed here have important implications for policy makers and educational practitioners. The near-zero relation of T3 home language use and the nonsignificant paths from T2 L1 proficiency to T3 English outcomes, and from T1 use of and proficiency in L1 to T2 English self-concept; and particularly the significantly positive path from T2 L1 proficiency to English standardized test found in the analysis refute the claims of advocates of monolingual education on the basis of bilingual students' apparently lower academic achievement. Although the negative impacts of home language use in 8th grade on English standardized test and English proficiency in 10th grade apparently provided partial support for speculations of negative impacts of L1 on English acquisition, these apparently negative impacts only existed in the earlier stage considered here. In the later years of high school, after controlling for the effects of prior English achievements and proficiency in 10th grade, the English outcomes can be explained mostly by the prior corresponding constructs. Thus after effective intervention, any negative impact of the use of L1 would no longer exist. Furthermore, the significant, positive impact of L1 proficiency on English standardized test in the later years of high school suggests the potential benefits of enhancing L1 proficiency in not only the maintenance of the home language, but also in perhaps English test performance. Whereas there is little the school setting can do about a bilingual's frequency of L1 use at home, substantial support for L1 enhancement is feasible.

Arguing for the enhancement of L1 proficiency, Lambert (1975) distinguished between "additive" and "subtractive" bilingualism. According to Lambert, with minority groups whose language is not dominant, and in many cases not prestigious, bilingualism can become positive only if the school and the educational system support and develop the students' L1 (additive); but may yield negative effects when the L1 is neglected and replaced by a dominant and more prestigious L2 (subtractive). More importantly, students who experience subtractive bilingualism tend to gain native-like proficiency in neither L1 nor L2. The results in this study seem to be in support of Lambert in that bilingual students with high proficiency in their L1 are more likely to benefit from the L1 in their L2 acquisition, and perhaps in other academic areas as well. Hence, support for bilingual education should include not only encouragement of students to maintain their home language, but active support from policy makers, educational administrators, and classroom teachers in the enhancement of their L1 proficiency. Without such support, bilingualism is less likely to be beneficial to the learner.

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Table 1
CFA Solution for Model

	Latent Variables															Uniq
	T1L1	T1EN	T1ET	T1EG	T1HL	T1EA	T2L1	T2EN	T2ET	T2EG	T2ES	T3HL	T3ET	T3EG	T3EN	
Factor Loadings																
BY825A	59*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	66*
BY825B	72*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50*
BY825C	96*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	08*
BY825D	92*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1e*
BY827A	0	76*	0	0	0	0	0	0	0	0	0	0	0	0	0	42*
BY827B	0	81*	0	0	0	0	0	0	0	0	0	0	0	0	0	35*
BY827C	0	91*	0	0	0	0	0	0	0	0	0	0	0	0	0	17*
BY827D	0	87*	0	0	0	0	0	0	0	0	0	0	0	0	0	24*
BY2NRIRR	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
BY881A	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
BY826A	0	0	0	0	66*	0	0	0	0	0	0	0	0	0	0	57*
BY826B	0	0	0	0	45*	0	0	0	0	0	0	0	0	0	0	80*
BY826C	0	0	0	0	87*	0	0	0	0	0	0	0	0	0	0	24*
BY826D	0	0	0	0	64*	0	0	0	0	0	0	0	0	0	0	59*
BY826E	0	0	0	0	46*	0	0	0	0	0	0	0	0	0	0	78*
BY826H	0	0	0	0	71*	0	0	0	0	0	0	0	0	0	0	50*
BY826I	0	0	0	0	66*	0	0	0	0	0	0	0	0	0	0	57*
BY870A	0	0	0	0	0	67*	0	0	0	0	0	0	0	0	0	62*
BY870C	0	0	0	0	0	60*	0	0	0	0	0	0	0	0	0	75*
F1855BA	0	0	0	0	0	0	58*	0	0	0	0	0	0	0	0	67*
F1855BB	0	0	0	0	0	0	66*	0	0	0	0	0	0	0	0	56*
F1855BC	0	0	0	0	0	0	86*	0	0	0	0	0	0	0	0	09*
F1855BD	0	0	0	0	0	0	93*	0	0	0	0	0	0	0	0	14*
F1857A	0	0	0	0	0	0	0	76*	0	0	0	0	0	0	0	42*
F1857B	0	0	0	0	0	0	0	85*	0	0	0	0	0	0	0	28*
F1857C	0	0	0	0	0	0	0	92*	0	0	0	0	0	0	0	15*
F1857D	0	0	0	0	0	0	0	89*	0	0	0	0	0	0	0	22*
F2NRIRR	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
F1839B	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
F1863B	0	0	0	0	0	0	0	0	0	0	74*	0	0	0	0	46*
F1863E	0	0	0	0	0	0	0	0	0	0	78*	0	0	0	0	43*
F1863G	0	0	0	0	0	0	0	0	0	0	86*	0	0	0	0	27*
F1863N	0	0	0	0	0	0	0	0	0	0	60*	0	0	0	0	64*
F2810BA	0	0	0	0	0	0	0	0	0	0	0	47*	0	0	0	78*
F2810BB	0	0	0	0	0	0	0	0	0	0	0	87*	0	0	0	24*
F2810BC	0	0	0	0	0	0	0	0	0	0	0	49*	0	0	0	76*
F2810BD	0	0	0	0	0	0	0	0	0	0	0	67*	0	0	0	56*
F2NRIRR	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
T3ENGRAD	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
F2S109A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	71*	49*
F2S109C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85*	28*
F2S109B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	94*	13*
F2S109D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	88*	22*
Path Coefficients (column variables to row variables)																
T2L1	59*	-03	-08*	-04	01	05										
T2EN	04	51*	11*	02	-14*	-04										
T2ET	03	04	77*	06*	-07*	02										
T2EG	-02	-04	27*	30*	07	09										
T2ES	04	04	29*	18*	00	20*										
T3HL	-07	-15*	-10	02	48*	10*	22*	-02	01	-02	-05					
T3ET	-02	-03	26*	01	-04	-01	09*	-02	58*	03	03	01				
T3EG	01	-04	16*	18*	-02	-03	-06	-03	21*	41*	03	04				
T3EN	00	41*	02	01	08	-10*	07	33*	06	-04	06	01				
Correlations among constructs																
T1L1	--															
T1EN	-05	--														
T1ET	-04	30*	--													
T1EG	05	15*	36*	--												
T1HL	48*	-33*	-26*	-06	--											
T1EA	19*	-04	04	33*	19*	--										
T2L1	61*	-09*	-13*	-03	33*	15*	--									
T2EN	-07	59*	30*	13*	-33*	-07	-03	--								
T2ET	-03	29*	82*	35*	-26*	05	-10*	32*	--							
T2EG	04	07	35*	42*	00	20*	02	10*	35*	--						
T2ES	07	14*	37*	36*	-05	27*	06	22*	39*	67*	--					
T3HL	32*	-38*	-33*	-11*	62*	20*	38*	-32*	-30*	-09	-12*	--				
T3ET	-01	28*	76*	33*	-24*	04	-03	28*	82*	34*	38*	-26*	--			
T3EG	-01	11*	53*	47*	-11*	13*	-10*	12*	53*	62*	48*	-15*	49*	--		
T3EN	02	61*	27*	10*	-18*	-10*	03	58*	29*	06	17*	-23*	26*	05	--	
Residuals	1	1	1	1	1	1	62*	62*	32*	77*	77*	52*	59*	47*	53*	

Note. N = 889. English test (ET) and grade (EG) were 1-item constructs. Home language use (HL), English (EN) and home language (L1) proficiency, and English affects (EA) and English self-concept (ES) were inferred from multiple items. Uniq = uniqueness. Parameters with values of 0 or 1 were fixed in the definition of the model. Results are reported without decimal points. *p< 05. This model has χ^2 (df) value of 1,518.02(714), TLI = 971, RNI = 977, RMSEA = 033 [from null model with χ^2 (df) = 35,414.38(903)].

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